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COMPARATIVE EVALUATION OF PATHOLOGICAL AVAR FINDINGS FROM EXCAVATIONS BETWEEN THE DANUBE AND TISZA RIVERS

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Abstract

We have analysed the pathological deformations observed on 434 skeletons of five Avar cemeteries from the Danube-Tisza Interstream Region. The diagnosis of pathological findings is relying on earlier literary data and present-day investigations. The deformations of most frequent incidence are: osteoarthrosis and spondylosis derformans, as well as the initial and grave stages of cribra orbitalia. Clinical pictures of rarer incidence are: spondylitis tuberculosa, myeloma multiplex, aneurysma and bone metastasis. The examination of the pathological findings of the same archaeological age does not always refer to an identical way of life and the conditions of life in that age. We can only conclude the incidence, frequency and course of the clinical picture in a given from certain diseases.

Introduction

The pathological analysis completes the investigation into the historical populations carried out with the traditional anthropological methods, by adding one of the links in the chain leading to the biological reconstruction. And in addition to this, it enable us, as well, to establish of the series showing the corresponding anatomical variations, developmental anomalies — owing to the coincidence of anomalies — that the individuals may supposedly have been even in a closer connection with one another (ANDERSON, 1966; GRÜNEBERG, 1963). It is problematical, however, whether we may conclude from the parallelism of the pathological deformations in the stricter sense of the word, manifested in the skeletons, and from their occurrence in masses, an identical form of life or a genetic connection. For investigating this, we have evaluated the finds of five cemeteries from the age of Avars from pathological point of view.

Materials and Methods

The five series from the age of Avars, selected from the plain between the Danube and the Tisza rivers (apart from Hungary including Yugoslavia, as well), lie geographically close enough to one another. Most of these are already elaborated by means of metric, taxonomical and pathological methods (the missing pathological examination is contained in the present paper). There are to be enumerated the following items.

1. Mélykút-Sáncdülő: the early Avar cemetery with 45 graves, characterized by archaeological furniture, is anthropologically and archaeologically equally very important. It is a fully excavated cemetery. Its characteristic is that, apart from the early Avar graves, some graves with Sarmatic goods were also found, chronologically agreeing on the basis of the quotient of decomposition. The numbers of males, females and children are: 17, 22, resp. 6. They are taxonomically Europid, the Mongolid great race has only a single representative (MARCSIK, 1971). On the basis of the cemetery map, there could be supposed only two large families within which chronological differences and, on the basis of blood-group quality, family relations can be demonstrated (FARKAS—LENGYEL—MARCSIK, 1971). This fact is supported by the archaeological graves furniture, as well (KŐHEGYI—MARCSIK, 1971). The pathological elaboration of the cemetery took only place partially within the general anthropological elaboration (MARCSIK, 1971). Completing this with the present investigations, we have to mention the following major morhological and pathological deformations: the processus temporalis ossis sphenoidalis — as a peculiar anatomical variation —, the spina bifida — classified among malformations (in sacrum and atlas equally) — the sacralisation, the openness of the foramen transversarium, and the spondylolysis. From among the pathological deformations in the strict sense of the word we have to emphasize — as they occur in the skeleton — the osteoarthrosis (at the articular surfaces of vertebrae but at the epiphyses of the long bones, as well) and the spondylosis deformans (in the cervical, lumbal, thoracal sections equally). The porotic form of cribra orbitalia can only be seen in five crania. Status post fracturam is only to be observed in the skeletons of three males (in one of the cases accompained by a strong callus-formation while in the other two cases by osteomyelitis). In the caput femoris of the young-age left femur from grave 28 a cavitation can be seen, with a diameter of 1 cm, lying one and half cm from the surface. The gap begins in the fovea capitis femoris, there is a similar resoptive cavity also in the fuga of epiphysis but this is smaller. In the left fossa acetabuli two major circular openings are to be observed. In the right femur there is to be seen no similar deformation. This cavitation may have been, very probably, the result of a bone process of tuberculotic origin (HARANGHI, 1966). The process itself may have begun at the enlarged double opening of the fossa acetabuli, following the line of the ligamentum teres femoris, more exactly that of blood vessels running in this which have an intensive part in feeding the head of the thigh. Osteoporosis generalisata can be seen in more than one skeleton but these are from the older age, their significance may, therefore, be neglected.

2. Kunszállás-Fülöpjakab: the metric-taxonomical examination of 50 skeletons of the cemetery with rich grave furniture from the late age of Avars was performed by LIPTÁK—VARGA in 1971. It is a series of Mongolid and Mongoloid preponderance (11 males, 21 females, 18 of undetermined sex). The results achieved by analyzing the inorganic matter of bones (VARGA, 1971) supported the diagnosis of pathological processes (VARGA—MARCSIK, 1975). It is to be seen from Table 1 of the latter monograph that in the series seven kinds of deformations are confined to 21 cases and affect 10 skeletons (three males, seven females). These seven kinds of deformations are as follows: spondylosis deformans, arthrosis deformans, spondylarthrosis (osteoporomalacia, senilis atrophia), block vertebra, status post fracturam anomalies. The deformations of arthrosis manifest themselves in the bones found in the cemetery at Kunszállás in an extremely grave form. The

cribra orbitalia, not characterized in this paper, are limited to an obviously low number of cases, not more than three (two males and one female), in porotic and cribrate forms. Eight of the ten skeleton's graves are located beside one another in the cementery map. This phenomenon, as well as the connection according to the determination of blood groups permit to suppose that the eight individuals may have been in blood-relationship with one another.

3. Süköd—Ságod: the skeletons of 165 graves of the cemetery, medium rich in archaeological grave furniture, were elaborated. On the basis of the grave goods, this matter forms a transition between early and late Avars. The beginning of the cemetery may have been between the years 640 to 660 while in the middle of the 8th century the buryings already ceased to continue. From among these 41 are males, 68 are females and 56 are children. It is a cemetery of mostly Europid character; the Mongolid element can be demostrated in four cases. But taxonomically, there could only be diagnostized a single Mongolid cranium (KŐHEGYI—MARCSIK, 1971a). The cemetery is extremely interesting from pathological point of view, what is confirmed by a series of papers published (MARCSIK, 1972; KŐHEGYI—MARCSIK, 1976; MARCSIK, 1975; MARCSIK—KÓSA, 1976, 1976a). It is shown by these papers that, apart from several anatomical variations and developmental anomalies (atlas manifestation, open canalis caroticus), some characteristic deformations may also be found. Thus the spondylitis tuberculosa (1 case), accompanied also by coxitis tuberculosa, as well as the primitive and the fully express forms of the cribra orbitalia (hyperostosis spongiosa orbitae). This latter was observed at three children, at one of them, however, also the hyperostosis spongiosa cranii is present. In one case, also the characteristic cranial deformation of the myeloma multiplex is remarkable while in another case a longer recess at the internal surface of the cranium — supposedly as a result of an aneurysm. In addition to these, in a few cases, osteoarthrosis and spondylosis deformans also occurred. In two cases, we have observed the characteristic necrosis of the processus of the mandibula.

4. Baja — Dózsa György street: neither its archaeological nor its anthropological elaboration has taken place. It turned out from the excavation record (and I wish to express here my thanks to M. KŐHEGYI for having made the excavation record and map available to me (that not more than ten graves of a late Avar cemetery could be rescued. The sex and age of life determination of the ten skeletons, as well as their pathological examination, are contained in the present paper. The number of males is four, that of females three and that of children the same. Although the metric-morphotaxonomical determination of skeletons has not taken place, we could establish definitely that, two femals are Mongolid for sure, while the other adults are Europid. According to the pathological investigation performed, in this small series the primitive and grave outward forms of the cribra orbitalia are to be emphasized. Their division is shown in the following summary.

The different formations of cribra occurred, therefore, in four cases of the ten finds. In the cranium showing hyperostosis spongiosa orbitae, some deformations referring to rachitis can also be recognized (the tuber frontalis and parietalia protrude more, giving a characteristic cubic shape to the skull). The graves of skulls, showing different degrees of cribra, are localized in the cemetery map close to one another. (In addition to, in one case, the traces of osteoarthrosis are also to be seen in the vertebra.

Cribra orbitalia		Inf. I.	Inf. II.	Juv.
porotic	with similar deformation in the os frontale	—	—	1
	with hyperostosis spongiosa cranii	—	1	—
cribrate		—	1	—
hyperostosis spongiosa orbitae (with further porotic areas of the cranium)		1	—	—

5. Bačka-Topola: In Yugoslavia, in findspot Bačka-Topola near Subotica, 202 graves were excavated, 33 of these being of Sarmatian age. According to the oral communication of the archaeologist L. SZEKERES, these are comparatively rich in grave furniture. Age of life and sex were determined by GY. FARKAS. In his opinion, from the 164 finds examined 57 are males, 65 females while the number of children is 42. Taxonomically — provisorily — they are mostly Europo-Mongolids, Mongolids. As in the skeletons a great many anatomical variations, pathological deformations can be observed, thus the elaboration and detailed evaluation of these both took place (FARKAS—MARCSIK—VÉKONY, 1976; FARKAS—MARCSIK, in press; FARKAS—HUNYA—MARCSIK, 1978; MARCSIK—FARKAS, in press). Within the anatomical variations, developmental anomalies, the incidense of torus mandibularis, the opennes of the canalis caroticus, the appearance of the spondylolysis, the "cleft" vertebra and spina bifida are very important. From among the graver pathological deformations there are obvious in three skeletons the spondylitis tuberculosa, in more than one case the different degrees of spondylosis deformans (with block-formation), of arthrosis deformans, as well as of cribra orbitalia) in one of the cases hyperostosis spongiosa cranii is also visible). The osteolytic and osteoplastic of the multiplex incidence of a metastatic process is discernible in the skeleton of a male but there cannot be observed any deformation in the skeleton refferring to a primary tumour. The gibbus-formation owing to the above-mentioned progress of disease (spondylosis deformans, spondylitis tuberculosa), the great frequency of osteoporosis (accompanied mostly by fishshaped, resp. wedge-shaped vertebrae), the strong osteophyte-formation in the vertebral body, the regular grouping of developmental anomalies in the cemetery map are refferring to an identical form of life and a closer community. The high number of the pathological deformations in the series is interesting in itself and presupposes endogamy.

Discussion

We have analysed the pathological deformations observed on the 434 skeletons originating from the Danube-Tisza Interstream Region (130 males, 179 females, 125 undetermined and children). The diagnosis of our pathological findings is relying on earlier literary data and present investigations. In the course of the latter ones, we also arrived at general anthropological conclusions. Thus:

1. The value of the Collo-diaphysis angle — used for differentiating sexes — demands due circumspection. In the older age, its value declines, even irrespective of sexes: the area of the acetabulum facies lunata often merges into the fossa acetabuli. Therefore in the fossa acetabuli the traces of a denser vascular system, as distinguished from the average, or a quite deepened area of it can be observed. The fovea capitis femoris grew larger, became deepened. Therefore, in erderly age, the pelvic-femur joint gets into vara position, independently of sexes.

2. We know from Houghton's paper (1974) that sulcus praeauricularis is characteristic not only of females but a weaker expressed form of it can be found in the male pelvis, as well (indifferent sex character). We could confirm this statement in our own material, too.

Our earlier establishment that the hyperostosis spongiosa cranii may be considered as a graver outward form of cribra orbitalia, is justified, apart from the cemetery at Sükösd, also by the finds in Baja-György Dózsa street. On the basis of our investigation (MARCSIK—KÓSA, 1976; 1976a), in the aetiology of these we have supposed the disturbances of the haemopoietical system as a pathogenetic factor. ASCENZI (1976) is emphasizing in case of the form with hyperostosis the pathogenic role of thalassemia major, while EL-NAJAR et al. (1975, 1975a) are mentioning in their paper hypoferric anaemia as an aetoligical factor.

The brief summary of the pathological deformations occurring in the material of the five cemeteries investigated is given in Table 1. (It is, of course, made difficult to drow the conclusions by that, except for the cemetery at Mélykút, the other cemeteries are not fully excavated). On the basis of the investigations it turned out that, as to the pathological bone finding, there is generally no diffierence between males and females, with the exception of the cribra orbitalia (or porotic hyperostosis), seen most frequently in the crania of females and children.

It can be ascertained from the data of Table 1 that, with the exception of the finds in the cemetery at Mélykút, that in any case we meet rather the graver clinical picture. The cause of the difference is perhaps that this cemetery is an early Avar one while the others are from the later time of Avars or they are from a transitional age. We could, of course, draw consequences only after looking over several early Avar series. At comparing the pathological findings of Avar cemeteries, we have found some deformations, like the osteoartrosis and spondylosis deformans, occurring in all the five series. But from these two clinical pictures we could not draw any conclusions that would refer to an identical way of life. On the one hand, because the inflammatory as well as regressive processes of joints cannot be separated in a palaeoanthropological material with absolute certainty; on the other hand, because the morphological finding is also in case of spondylosis deformans the same but for its appearance innumerable aetiological and pathogenic factors may be responsible. Healed fractures were found, with the exception of the finds in Baja—Gy. Dózsa street, in the material of all the cemeteries. These can be evaluated if they occur in the form of an independent clinical picture. Similarly, the myeloma, aneurysma, bone metastasis, like rarely occurring clinical pictures, are significant at an analysis within the series.

The evaluation of the incidence of cribra orbitalia in masses already enables us to drow the conclusions connected with the investigation into aetiological factors. In this case if we accept the hypoferric anaemia like its aetiology then this refers to the general malnutrition of that age like an endemic disease. That is to say, it is

Table 1. Comparison of some Avar series

Findspot	Mélykút	Kunszállás	Sükösd—Ságod	Baja—Gy. Dózsa	Bačka-Topola
Archaeological age	early Avars	late Avars	early-late Avars	late Avars	early-late Avars
No. of skeletons examined	45	50	165	10	164
Taxonomical determination	Europid	Mongolid Europid	Europid Mongolid	Mongolid Europid	Mongolid Europid
Major pathological deformations	osteoarthrosis	osteoarthrosis*	osteoarthrosis	osteoarthrosis	osteoarthrosis*
	spondylosis deformans	spondylosis deformans	spondylosis deformans	—	spondylosis deformans*
	cribra orbitalia	cribra orbitalia	cribra orbitalia*	cribra orbitalia*	cribra orbitalia*
	fractura	fractura	fractura	—	fractura
	—	myeloma multiplex?	myeloma multiplex	—	—
	—	—	aneurysma?	—	—
	tbc?	—	tbc*	—	tbc*
	—	—	—	—	metastasis*

* The deformations indicated with "*" manifested themselves in an express form.

characteristic of the general living conditions in that time. And if we consider the thalassemia or one of its kinds as an elicting factor then primarily genetic factors have a part in their induction.

The general way of life can be concluded from the appearance of bone tuberculosis only partially, taking into consideration that the pulmonary and enteric forms cannot be separated from each other.

The investigation into pathological findings of the some archaeological age do not always refer to the same way of life and the living conditions of that age. In the given case, the incidence, frequence and pathological process of the clinical picture can only be concluded from certain diseases.

References

ANDERSON, J. F. (1966): Skeletal "Anomalies" as genetic indicators. (in edit. Brothwell, D. R.: The Skeletal Biology of Earlier Human Populations.) — Pergamon Press 135—147.

ASCENZI, A. (1976): Physiological relationship and pathological interferences between bone tissue and marrow. (in: The Biochemistry and Physiology of Bone.) — Second Edition Volume IV. Academic Press, Inc. New York, San Francisco, London.

EL-NAJJAR, M. Y.—LOZOFF, B.—Ryan, J. D. (1975): The paleoepidemiology of porotic hyperostosis in the American Southwest: radiological and ecological considerations. — The American Journal of Roentgenology, Radium Therapy and Nuclear Medicine *125*, 918—924.

EL-NAJJAR, M. Y.—MORRIS, P.—TURNER, G. CH.—RYAN, J. D. (1975a): An unusual pathology with high incidence among the ancient Cliff-dwellers of Canyon de Chelly. — Plateau *48*, 13—21.

FARKAS, GY.—LENGYEL, I.—MARCSIK, A. (1971): Supposition of genetic connections between the finds of the cemetery at Mélykút—Sáncdűlő (Southern Hungary) on the basis of blood grouping ABO. — Acta Biol. Szeged. *17*, 199—207.

FARKAS, GY.—MARCSIK, A.—VÉKONY, L. (1976): Vertebral deformation in the avar skeletal material. — Anthropologie *14*, 231—233.

FARKAS, GY.—MARCSIK, A. (1978.): Paläopathologische Fälle in der awarenzeitlichen Serie Bačka-Topola aus Jugoslawien. — EAZ. 1979/1.

FARKAS, GY.—HUNYA, P.—MARCSIK, A. 1978: Hypothesen zur awarenzeitlichen Serie von Bačka-Topola auf Grund ninchtmetrischer Merkmale und pathologischer Fälle. — Mitt. d. Sekt. Anthr. d. Biol. Ges. DDR. 3—14.

GRÜNEBERG, H. (1963): The Pathology of Development. — Wiley, New York.

HARANGHY, L. (1966): A kórbonctan elemei. — Medicina, Budapest.

HOUGHTON, PH. (1974): The Relationship of the Pre-auricular Groove of the Ilium to Pregnancy. Am. J. of Phys. Anthrop. *41*, 381—384.

KŐHEGYI, M.—MARCSIK, A. (1971): Das sarmatische und awarische Gräberfeld von Mélykút. — MFMÉ. 1971. *2*, 119—128. Szeged, 1974.

KŐHEGYI, M.—MARCSIK, A. (1971a): The Avar-age cementery at Sükösd. — Acta Antiqua et Arch. *14*, 87—95.

KŐHEGYI, M.—MARCSIK, A- (1976): Anatómiai variációk, fejlődési rendellenességek és szelektált patológiás leletek egy avarkori sorozatból. — Comm. Hist. Artis Med. *77*, 9—25.

LIPTÁK, P.—VARGA, I. (1971): Characterisierung des anthropologischen Materials des awarischen Gräberfeldes von Kunszállás. — MFMÉ. 1971. *2*, 71—79. Szgeed, 1974.

MARCSIK, A. (1971): A Mélykúti avarkori temető embertani leleteinek vizsgálata (Anthorpological investigation of a cemetery at Mélykút from the Avar Period). — Anthrop. Közl. *15*, 87—95.

MARCSIK, A. (1972): Generalizált tbc megbetegedés diagnózisa egy avarkori csontvázon (Diagnose einer Generalisierten TBC-Erkrankung auf einem Awarenzeitlichen Skelett). — Anthrop. Közl. *16*, 99—103.

MARCSIK, A. (1975): Egy csontelváltozás feltételezett aetiologiája (The presumed etiology of a bone change). — Anthrop. Közl. *19*, 47—53.

MARCSIK, A.—FARKAS, GY. (in press): Hypothesen zwischen der Gräbern eines Gräberfeldes auf Grund genetischer Zusammenhänge. — Union Internationale des Sciences Préhistoriques et Protohistoriques IX[e] Congrés különkiadványa, Nice.

MARCSIK, A.—KÓSA, F. (1976): Újabb adatok egy vitatott paleopatológiai lelet aetiologiájához szövettani vizsgálat alapján (Further data to the debated etiology of a palaeopathological find). — Anthrop. Közl., *20*, 127—131.

MARCSIK, A.—KÓSA, F. (1976a): Pathological Aspects of paleoanthropological finds. — Acta Congressus Internationalis XXIV. Historiae Artis Medicinae 1974 Budapestini II. 1301—1307.

VARGA, I. (1971): Die biologische Altersbestimmung der anthropologicshen Funde des awarenzeitlichen Gräberfeldes von Kunszállás. — MFMÉ. 1971. *2*, 129—141. Szeged, 1974.

VARGA, I.—MARCSIK, A. (1975): Palaeopathological characterization of the skeletons of an avar series (Kunszállás—Fülöpjakab). — Acta Biol. Szeged. *21*, 181—192.

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